



Strengthening Climate Justice Initiatives: Livelihood Challenges at the Local Level with a Focus on Farmers

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General Note



Article is recommended to print as color version in recycled paper. *Save Trees, Save Climate.*

The objective of the present note is to strengthen the call to reduce “climate – burdens” faced by farmers. We emphasize the fact that all farmers face such burdens with equal intensity and the small farmer however is exposed to greater spread and depth of risks due to inherent multiple vulnerabilities. A recap of some natural and induced calamities stresses the need to expedite and synthesize preventive and remediation strategies. Justice has to be delivered in a timely and holistic manner. This is possible due to the continually evolving evidence centered knowledge backing and thus the need for precautionary approaches. The present note cites such evidences from within the State of Gujarat and a wide variety of institutional mechanisms that can complement access to justice; only to re – emphasize the scope for locally adapted action within the purview of public policy measures.

Contours of justice & the farmer focus: The three well known facets of justice are fairness, moral rightness and a scheme or system of law that benefits every citizen. They receive due justice, manifest as natural and legal rights. The efforts of attorneys, judges, and legislature and public administration systems to deliver such justice are quite commendable. It is however essential to recognize the individual and synergistic impacts of systems related determinants that retard the pace of delivering justice and hence the inadvertent incongruence between the time at which justice is delivered and its relevance for further action. Some of the

predominant challenges include complicated procedures, inadequate seats of justice / courts, cases that exert a drag on time even as they may not merit immediate attention and less – than – optimal use of alternative dispute settlement procedures.

Yet another important dimension is the fact that poor people are not able to meet multiple costs of procedures or tools that can expedite access. The wealthy secure greater privileges and the poor tend to be neglected. This is especially true of farmers. Much as they suffer on several fronts, climate change and its impacts impose greater challenges and enhances vulnerability of the poor farmers in particular.

The specific challenge in this case is to devise appropriate mechanisms; inclusive in nature so that the voices of the poor farmers are also heard in a timely manner. Systems of law and honorable judges may like to note that climate change related impacts emerge through individual / synergistic stimuli with cross cutting implications. Amelioration strategies are aligned with the preparedness of farmers to use tools / techniques that deliver locally relevant and feasible solutions. Alternatives should be part of the baggage of solutions that have to be sustained with appropriate institutional, fiscal / non – fiscal and capacity building measures. A call for comprehensive approaches that go beyond piece – meal solutions is therefore essential.

Industry and urban township are mostly implicated in the creating the externality through the release of pollutants and other emissions. They have to be made responsible for the challenges caused and sustained support to overcome challenges in the longer term too. These are locally felt challenges of a global phenomenon and can be seen as externalities that the farmers are not responsible for. The stakeholders responsible for creating these challenges cannot be determined as there is no direct cause and effect relationship. But it is important to deliver justice to the affected communities in a timely manner. These should include technical, technological and financial inputs and safety nets as stated above so that the farmers can tackle climate related challenges immediately and sustain such transitions in the future too. Farmers have to be oriented to “Climate Smart Practices” on a priority basis.

A snapshot on causes and impacts of global warming: We are familiar with the fact that our earth is heated by sunlight. Most of the sun’s energy passes through the atmosphere, to warm the earth’s surface, oceans and atmosphere. However, in order to keep the atmosphere’s energy budget in balance, the warmed earth also emits heat back to space as infra-red radiation. A natural system known as the “greenhouse effect” regulates temperature on Earth. Just as glass in a greenhouse keeps heat in, our atmosphere traps the sun’s heat near earth’s surface, primarily through heat-trapping properties of certain “greenhouse gases”.

Over the past thousands of years, the amount of greenhouse gases in our atmosphere has been relatively stable. A few centuries ago, their concentrations began to increase due to the growing demand for energy caused by industrialization, rising populations, and due to changing land use and human settlement patterns. The greenhouse effect refers to the change in the steady state of temperature by the presence of gases that absorb and emits infra-red radiation. The greenhouse gases trap heat within the troposphere. The gases are water vapor, carbon dioxide, ozone, methane, nitrous oxide and chlorofluorocarbons. Nitrogen, oxygen and argon make up 98% of the Earth’s atmosphere. But they do not absorb significant amounts of infra-red radiation and thus do not contribute to the greenhouse effect. Carbon dioxide (CO₂) constitutes about 72% of total GHG and contributes the bulk of radioactive forcing. The concentration of carbon dioxide (CO₂) in the atmosphere has increased from 285 ppm at the end of the nineteenth century before the industrial revolution, to about 385 ppm in the new millennium.



Methane is produced when vegetation is burned, digested or decayed with no oxygen present. Garbage dumps, rice paddies, and grazing cows and other livestock release methane. Nitrous oxide is released when chemical fertilizers are used in agriculture. The other gas is SF-6. Importantly the industrialized nations are the largest emitters of these gases.

Some important natural calamities with comparable effects: Unpredictable climate is a threat to the sustainable development. This creates havoc around the world, destroying habitats and disturbing people's livelihood. Some of the recent natural disasters related to this phenomenon in India are narrated below. It must be noted that our country is not new to droughts, cyclones etc. She is however experiencing much greater frequency and intensity in recent times. These include:

- Gujarat Earthquake, 2001 in Kutch as one of the most devastating with 19,727 deaths, 1,66,000 injured and nearly 6 lakh homeless. 3,48,000 houses were destroyed, 20,000 cattle killed and the estimated loss was about USD 1.3 billion.
- Tsunami December 2004 affected Andaman & Nicobar, Pondicherry, Kerala and Andhra Pradesh causing loss of agri-crops, cattle wealth, housing and livelihood.
- Mumbai Floods of 26th July 2005 paralyzed the city.
- Surat floods (2006) that caused an estimated Rs.22,000 crore loss affected the city's infrastructure, in addition to individual and agri losses especially of sugarcane (Rs. 4,000 crore)
- Heavy rains in 2007 in Rajasthan with flooding and consequent breakout of diseases, loss of crops and cattle wealth.
- Koshi river overflow in Bihar; dam in Nepal giving way affecting large areas of Bihar and UP.
- Droughts of 2009 in some states due to delayed monsoon.
- Heavy floods in Northern India and un-seasonal showers and snow in some parts of India
- 2011 -13 floods in Andhra Pradesh; the land slide in Uttarakhand and the delayed monsoon of 2014-15.

Similar impacts have been evident in other parts of the world too. These include tornadoes in USA that inflicted damage quantified at \$9 billion, the 2010 heat wave in Russia that killed hundreds of people and led to a 40% fall in the harvest of food grains; floods in Australia and Pakistan that killed thousands of people and devastated agricultural lands; re-current droughts in China, tsunami in Japan, recurrent and continuous famines in Ethiopia - Somalia and riots for food by hungry millions; recurrent floods in South East Asia, Philippines, Indonesia, Thailand etc.



Some of the long standing impacts pertain to loss of livelihood, increased risk of diseases outbreak and germination of new viruses, damage to infrastructure and communication particularly in rural areas, setback to social and economic development and emergence of social turmoil with increased rural urban divide, pushing farmers in rural areas again below the poverty line, poor productivity and food insecurity. Justice in terms of monetary compensation alone will be incomplete. A comprehensive multi – pronged approach to sustain preventive and remediation benefits is needed. In this context it is essential to take note of emerging leads regarding impacts and align management strategies for optimal benefits. Some of these aspects are presented in brief in the following presentation.

Important leads from research at the Anand Agricultural University

- Sensitivity of CERES-Peanut (Groundnut) model to ambient temperature under optimal condition (cv. JL-24)

Change in mean ambient temperature (°C)	Simulated grain yield (kg / ha)	% Change from base (2200 kg / ha) yield
1	2,152	2.1
2	1,888	14.2

The area under groundnut crop in Gujarat is 19 lac hectares. An increase in temperature by 3°C, could influence reduction in groundnut yield by 31.2% i. e. 13.2 lac ton per year.

- Sensitivity of CERES-Wheat model to ambient temperature under optimal condition (cv. GW-496)

Change in mean ambient temperature (°C)	Simulated grain yield(kg / ha)	% Change from base (5825 kg / ha) yield
1	4,078	-30
2	3,675	-37
3	3,266	-44

The area under wheat crop in Gujarat is 24 lac ha. An increase in temperature by 3°C, could see a reduction in wheat yield by about 44% i. e. 12.5 lakh ton per year.

Some projections with respect to India as a whole include change in rainfall pattern by the end of the 21st century, increase in temperature by 2 to 4 °C, pronounced warming over most of the land areas with a maximum increase over northern India, relatively greater warming in winter and post-monsoon seasons and greater frequency of cyclones during post-monsoon seasons.

It is important to note the drought in 2002 reduced 15 million hectares of the rainy-season crops and resulted in a loss of > 10% in food grain production. Last year (2013) delayed monsoon rains caused a fall in rice cultivation. Terminal heat stress is lowering yields of late-sown wheat yields and cold waves during December 2002-January 2003 significantly affected mustard, mango, guava, papaya, brinjal, tomato and potato in northern India. The cold wave in 2006 damaged 50-60 % of young and 20-50 % old mango trees. Other fruit crops as guava, aonla, banana, papaya, bael, karonda, chironji, khirni, mahua, tamrind, wood apple and jamun were also affected. On the other hand, high rainfall in 1998 and 2005 (> 1500 mm) affected kharif and late kharif crop of onion and damaged the rabi nursery leading to price hike. Cashew yield and quality were affected due to untimely heavy rain in March 2008 along the west coast. Apple cultivation appears to have shifted to higher elevations due to inappropriate chill and sea surface temperature increase by 2-2.5°C in May 1998 led to bleaching in 85% coral reefs. Nearly 20 lakh birds perished due to heat waves in June 2003.



Continuous higher temperatures during critical growth stages of rabi crops reduces the crop yields considerably. Rising trends in minimum temperature during *kharif* season have negative impact on rice yields. About 278 districts exhibited a negative impact of rising temperatures and 59 of them showed statistical significance. Negative impacts are noticed mostly on the eastern parts, Madhya Pradesh and in Indo-Gangetic Plains. As of September 2014, in Mansa, canals breached and about 10,000 acres of cotton crop were swamped. Heat wave can reduce a milk yield by 10-30% in first lactation and 5-20% in second and third lactation periods in cattle and buffaloes. It also affects the growth, puberty and maturity of crossbreed of cows and buffaloes. Fish tend to migrate to lower strata and suffer mortality in the shallow areas.

Small farmers stare at big losses

- Monsoon delay has pushed 20 of the 75 districts in UP to the brink of drought. Worst-hit are in Meerut, Kanpur and Varansi, where dry spell has damaged paddy.
- Unusual rain has harmed crops in parts of Bankura, Purulia and East Midnapore in Bengal. Large-scale flooding, after heavy rains affected 23 districts in Odisha and entire regions of Kashmir. Source: Economic Times, 7 September, 2014

The way forward: The aspects stated above have to be addressed through a climate justice perspective. The larger questions accordingly pertain to six inter related aspects. They are

- Legal and administrative framework / provisions for farmers can invoke for redressal and thrust responsibilities for related impacts
- Existing safety-net provisions and mechanisms to deliver them to the affected families
- Expedited delivery of services through government support schemes
- Economic Inequities and system related barriers faced by farmers
- Systems of warning and weather forecasts / agro-advisories and appropriate practices to tackle challenges that may occur prior to / during and post – harvest periods &
- Accountability of industry, urban / peri urban areas including such infrastructure projects as power generation, ports, mining etc that generate these externalities.

The centrality of the farmer & The Indian perspective to tackle challenges and present systems: It is possible to establish synergies across systems that address post – disaster reconstruction / rehabilitation, employment guarantee, crop insurance and food security.

Some basic elements are embedded in the Disaster-Reconstruction Policy that provides immediate help to people affected by natural calamities. It includes shifting people as a precautionary measure and provides assistance to the affected during floods/cyclone. This includes cash doll as payment covering a 15 – day period; assistance for household kit / replacing lost or dead livestock-lost / Repair or restoration of houses collapsed or washed away and crop insurance / employment till onset of monsoon in community project during drought and health services. The Employment Guarantee Scheme (Act) – MNREGA (Mahatma Gandhi National Rural Employment Guarantee Act), related crop and cattle insurance and Minimum Support Price that protects farmers in time of falling price due to bumper crops or speculation.

The National Food Security Act provided for food security to both urban and rural poor. Approximately 67% of rural population is entitled to receive subsidized food grain form Public Distribution System. 11 states have introduced this scheme. Operational issues pertaining to some of these are being sorted out. Grievance redressal is possible through the Legal Aid Cell that guides and even provides a lawyer without any fees for those who cannot afford. The Lok Adalats are open courts to settle issues by calling aggrieved parties together.

The district level public administration (as in Gujarat) consists of a District level Committee headed by the Minister (In charge of District), Secretary (In charge of District) and District Collector. They meet every month to listen to aggrieved parties. A public hearing process is also operational. Those who are not satisfied with the decision or want to take up the matter at a higher level can directly file complaints in CM office through online mechanism. CM takes up video conferences every month to settle /receive such complaints. Following important challenges persist despite these support systems.

1. A large number (approximately 20%) people are left out of the food security and employment guarantee schemes. They are consequently left out of development process> this hampers their ability to tackle such challenge as loss due crop-failure or Cattle death or Washing away of crop and soil.
2. Safety nets dealing with inputs and marketing are riddled with leakages.
3. In the case of crop insurance, delay in payments reduces benefits significantly. Quantification of damage is a major point of contention. In the case of car insurance, the insurance company assesses the case on an individual basis. Independent consultants examine the damage and enable access to insurance. In case of crop insurance, the assessment is too broad based, going beyond the village level too. With recent changes in climate, there is a difference in rainfall pattern between two adjacent villages. Differences in yields are seen even across individual farms. In case of individual assessment of farmer where crop fails he / she are entitled to insurance payment. However, in the current general assessment approach, it is the overall rainfall pattern or crop yield that determines settlement of claims. India has advanced in a big way in satellite technology. It is possible to identify farm-wise detail through satellite images and optimal use of other tools of knowledge economy. Is it not essential for insurance companies to use all available state of art tools to quantify losses and covers?
4. Every year the government all over the country introduces new town planning scheme under Town Planning and Urban Development Act. Authorities draw out the town plan, acquire land for public purpose and re-allocate exiting plots. Several villages get covered under expansion schemes. Every village in our country has animal holders who could even be landless. The government provides for “Community Grazing Area” for all cattle. In context of overall increase of temperature it will be essential to also provide heat shelters for these cattle in designated areas. Recently common grazing areas are not given any importance. It gets authorized and distributed for other community - related purposes as roads, gardens etc. The end result is that animal holders pay greater costs. This cost of development is paid by poor animal holders. This is a glaring example of inequity. A query under Right to information Act with the Ahmadabad Urban Development Authority has confirmed that no land is reserved (response is “not pertaining to this department”-source Reccd/RTI/AUDA/1138/24th Sep .2014) for communities or cattle or livestock. The Urban Development Authority should provide for community grazing lands, community housing for cattle, recycle water and make available for irrigation, recycle solid waste and convert in to fertilizer and make available to both farmers and new settlers.
5. A comparative statement on related governance tools is presented in the following table.

Crop Insurance	Average settlement period (1 to 2 years), while requirement is immediate for re-sowing	Car Insurance and Medical Insurance	Normally Insurance company makes direct payment and have Cashless provisions
Inputs Seeds	No action if no germination takes place. \	Consumable and non-consumable goods	Immediate exchange / replacement within stipulated period in case product fails to meet standards depicted
Sale of Agriculture produce	Gets banned for exports if there is internal (within country) shortage & with price rise, farmers loses higher value from its sale if exported	Industrial products	There is no such ban
4. Tenancy Law (If farmers retains / hires workers)	Under certain conditions the workers can become owner – under Tenancy Act. Farmer is under constant threat of local Talati who maintain land records.	Urban developer rents out house	The Tenant cannot become owner
Sale of Agriculture produce	Compulsory in local Agriculture Produce Market Yard where traders run action system and form cartels (APMC Act)	Sale of Industrial Produce	Industries can sell products wherever they want
International assistance. Carbon Credit	Small farmer cannot even present relevant details, or fill up a form; let alone understanding its complexities	This is devised only to help polluters. The difficult format which can be filled only by Consultants	
Organisations	There are NGOs at the national and international level that voice farmer's interest. They could have their own agendas and may work at cross purposes if the objectives and intent are not for common good.	Farmers have actually no voice in what is being represented on their behalf.	

Call for action at the local level: The emphasis of the NCCSD is on initiatives at the local level including Local public Administration. These pertain to Taluka level members of Public Governance System. This include the Sub Judicial Magistrate, Taluka Magistrate and Mamlatdar, the Taluka Development Officer and the Police Inspector in addition to commercial and co-operative banks, the Agriculture Produce Market Committee yard (APMC) ,the Input dealers related to seeds, fertilizer and agriculture tool and equipments. They have to be sensitized to their responsibility in this context. They have to be made accountable. A "Limitation" could be imposed on them to respond on time and take corrective action. Significant delay occurs in moving papers across departments. The village panchayat's personnel have the statutory responsibility for development. They should take the initiative to push causes for timely justice. –The Sarpanch should visit the farms and help claim redressal.

Need for CSA

Special efforts are needed to create awareness and enable practice of Climate Smart and Sustainable Agriculture (CSA) practices. CSA addresses opportunities in agriculture, fisheries, poultry, other livestock and animal husbandry. The paradigm is to look for alternatives when some fail to provides support. Young members of the family can acquire multiple skills, set up microenterprises, establish newer safety nets, establish insurance and enhance employment opportunities. Climate smart agriculture involves crop patterns based on soil health and moisture analysis. They are guided by agro – advisories at the door step of farmers. This can be on the basis of immediate, medium and long term expectations of weather / climate patterns. Production and security systems can be suitably designed to overcome challenges. Mitigation and adaptation strategies can be twinned for optimal returns.

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The author is inspired by insights from the stated list of references and builds on his practical knowledge derived while serving the State of Gujarat and the country as a whole.

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